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questionable validity in the light of OSTERHOUT'S researches in this line.<sup>32</sup>—C. R. B.

**Anatomy of the ovule of *Myrica*.**—MISS KERSHAW<sup>33</sup> has investigated the ovule of *Myrica Gale*, and has discovered that in all of the morphological features it is an ordinary angiosperm, with its solitary megaspore mother cell, linear tetrad, eight-nucleate embryo sac, and porogamy. The following anatomical features, however, are worthy of mention: the nucellus is not only completely free from the single integument but is also distinctly stalked within it; vascular strands (eight or nine in number) traverse the integument, without branching, almost to the apex of the ovule. These two features of the ovule are usually regarded as primitive, belonging to the ancient gymnosperms rather than to angiosperms.—J. M. C.

**Phototropism of roots.**—LINSBAUER and VOUK, after overcoming many experimental difficulties, have found<sup>34</sup> that the roots of *Raphanus sativus* and *Sinapis alba*, which have been credited with being only negatively phototropic, react positively or negatively according to the intensity of the light. Roots of the former in moist air turn toward light of about 8 candles, while in water they are much less sensitive, no very certain curvatures being obtained until the light was increased to 400 c.p. *Sinapis* in water, on the contrary, gave the best positive response at 0.2 c.p., and decided negative curvatures at 0.64 c.p. These results support the MÜLLER-OLTMANN'S theory of phototropism.—C. R. B.

**Dispersal of seeds by ants.**—WEISS<sup>35</sup> has concluded that the gorse (*Ulex*) and the broom (*Sarothamnus*) should be included among myrmecochorous plants, along with *Chelidonium*, *Viola*, etc. He finds that the seeds have a brightly colored caruncle containing oily food material and resembling in structure and contents the elaiosomes (of SERNANDER) of other myrmecochorous plants; that ants are particularly attracted by the oil-containing caruncle, and can and will carry about the seeds of gorse; and that the rectilinear distribution of gorse bushes along actual or disused paths or roadways is only paralleled by the distribution of such plants as the celandine along ant-runs.—J. M. C.

**Anatomy of *Gleichenia*.**—BOODLE and HILEY<sup>36</sup> have investigated the vascular structure of *Gleichenia*, a genus interesting on account of its protostelic species.

<sup>32</sup> BOT. GAZETTE 46: 53-55. 1908.

<sup>33</sup> KERSHAW, EDITH MAY, The structure and development of the ovule of *Myrica Gale*. Annals of Botany 23: 353-362. pl. 24. 1909.

<sup>34</sup> LINSBAUER, K., AND VOUK, V., Zur Kenntniss des Heliotropismus der Wurzeln. Ber. Deutsch. Bot. Gesells. 27: 151-156. 1909.

<sup>35</sup> WEISS, F. E., The dispersal of the seeds of the gorse and the broom by ants, New Phytol. 8: 81-89. 1909.

<sup>36</sup> BOODLE, L. A., AND HILEY, W. E., On the vascular structure of some species of *Gleichenia*. Annals of Botany 23: 419-432. pl. 29. 1909.